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STUDIES OF IMAGES OF SHORT-LIVED EVENTS USING ERTS DATA

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16. Abstracts The Program to study short-lived events with the ERTS satellite has evaluated 91 reports of the Center for Short-Lived Phenomena from March 1, 1973 to August 30, 1973. Six of these events were chosen for further investigation in conjunction with ERTS images. We have currently studied 20 events during the the Program and conclude that useful data can be obtained from the ERTS images.				13. Type of Report & Period Covered Type II March 1973-Aug. 1973
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TYPE II REPORT

MARCH 1973 - AUGUST 1973

STUDIES OF IMAGES OF SHORT-LIVED EVENTS USING ERTS DATA

Submitted by: Dr. William A. Deutschman

Introduction:

The program to study short-lived events is continuing to study events observed by the ERTS satellite. Through the end of August we had evaluated 91 reports of events from the Center for Short Lived Phenomena and issued 6 Event Notification Reports. Images from 20 events are in house and have been studied to determine the detectability of the events. Furthermore, 10 of these events have been extensively studied and techniques for the rapid analysis of events have been refined. We have been able to detect old and new forest fires; oil spills; volcanic activity; floods and possibly a storm ridge in the Pacific Ocean. Table 1 lists the events we have considered to date.

The study of forest fires is a continuation of the work reported in our last Type II Progress Report. We are currently awaiting pictures of the Alaskan fire areas of this summer so that the time baseline that we study can be extended for one more year and any new fire areas can be detected.

One volcano (Sakurizima in Japan) has been studied in detail because of the cloud free images that were available. We have received extensive data from the Seismological Division of the Japan ERTS Meteorological Agency about the conditions during and after the ERTS scenes were taken and expect to obtain good correlation with the ERTS pictures.

Two oil spills have been studied, the San Juan river and Oakland Bay. They show that we can detect spills with the satellite if it is over the area at an appropriate time. In the case of the San Juan oil spill, the event could be detected on two successive passes.

The Funifuti storm ridge formation was studied and we believe that the ridge can be detected on the scenes. The scenes were taken some time after the ridge formed and it had washed away to some extent, but it is still possible to detect a widening of the atoll. Pictures taken before the event would make the determination much easier, but they are unavailable.

We are currently studying selected scenes of the spring floods on the Mississippi river and expect to finish them shortly.

TABLE 1

<u>EVENT</u>	<u>LOCATION</u>
Alaid Volcanic Eruption	Kuril Islands, USSR
Pah River Forest Fire	Alaska, USA
Bear Forest Fire	Near Ventura, California
Sakurazima Volcano Eruption	Kagoshima Bay, Japan
Mt. Merapi Volcano Eruption	Central Java
Miami Palm Lethal Yellow	Dade County, Florida
Oil Pipeline Spill	Shiprock, Arizona
Mud Slide	Big Sur, California
Piton Fournais Volcano	Reunion Island, Indian Ocean
Tfai Cyclone	Somalia, Africa
Floods-SE Australia	Queensland-NS Wales
Storm Ridge Formation	Funafuti Atoll, Pacific
Earthquake	Managua, Nicaragua
Acatenango Volcano	Guatemala
Pacaya Volcano	Guatemala
Helgafell Eruption	Iceland
Oil Spill	Oakland, California
Szechwan Earthquake	Western China
Irish Stardust Oil Spill	Alert Bay, Canada
Asama Eruption	Honsyu, Japan
Fuego Eruption	Guatemala
Oil Pipeline Spill	Cambridge, Wisconsin
Missouri-Mississippi Floods	USA
Natural Gas Escape	Williamsburg, Michigan
Floodway Opening	Louisiana, USA
Kilauea Eruption	Hawaii

New Technology:

We have added color to the technique of using the Grub Parsons Blink Microscope described in the last Type II Progress Report. The use of two colors enhances the ability of the observer to discriminate between different features in the scenes.

Program for the Next Reporting Period:

We intend to continue our investigation as we have in the past. Further investigation will be conducted on the existing events to determine if more information can be extracted from the images. We also expect to conclude the program and issue our final report during this period.

Conclusions:

We conclude that the ERTS images are useful for the study of short-lived events. The information obtained would be difficult, if not impossible, to obtain by other means.. The time lag between the occurrence of the event and the receipt of pictures precludes their real time use, but they are still a valuable source of information for use in studying short-lived events.